

ABSTRACT OF THE DISCLOSURE

A semiconductor sensor for direct detection of electrons has a pixel structure in which a capacitance is designed to each pixel that stores a charge and converts the charge into a readable voltage. A conductive layer substantially covers the pixel structure. The conductive layer includes pixel surface coatings, each of which cover an individual pixel. Each pixel surface coating is separated from each adjoining pixel surface coating by a gap. A second conductive layer covers a surface of the gap. An insulation insulates the pixel surface coating from the second conductive layer. The conductive layers may be metal or other conductive, light impervious materials. The second conductive layer may include a capacitor electrode.